APPENDIX B

WASTEWATER AND SOLIDS HANDLING DESIGN CRITERIA

1. Primary sedimentation.

Average Design Flow (mgd)	Surface Loading Rate (gpd/sq ft)
0.01	150
0.01 to 0.10	500
0.10 to 1.00	600
1.00 to 10.0	800
10.0	1,000

Hydraulic detention time = 2 to 2.5 hr.

Air supply capacity based on 1,500 cu ft of air per pound of BOD_5 applied to the aeration tank.

2. Final clarification

Average Design Flow (mgd)	Surface Loading Rate (gpd/sq ft)
0.01	100
0.01 to 0.10	300
0.10 to 1.00	400
1.00 to 10.0	500
10.0	600

3. Suspended growth vitrification
   Hydraulic detention time = 3 to 5 hr at average flow.
   Overflow rate = 500 to 800 gpd/sq ft.
   Diffused air application = 1.0 cu ft/gal
   ph = 8.0 to 8.6
4. Granular carbon adsorption
   Influent suspended solids concentration less than 50 mg/L
   Hydraulic loading = 2 to 10 gpd/sq ft.
   Contact time = 18 to 36 min at average flow.
   Carbon Requirements:
   1. Secondary wastewater treatment: 0.5 to 1.8 lb/1,000 gal
   2. Advanced wastewater treatment: 0.25 to 0.35 lb/1,000 gal
5. Multi-media filtration
   Application rate = 2 to 10 gpm/sq ft at average flow.
6. Lime clarification
   Lime dosage = 150 to 200 mg/L (single stage)
   300 to 400 mg/L (two stage)
7. Chlorination
   Contact time = 15 to 30 min at 4 hr peak (1.75 times average) flow rate.
   Dosage = 15 mg/L for trickling filter effluent.
   8 mg/L for activated sludge effluent.
   6 mg/L for sand filter effluent.
   5 mg/L for multi-media filter effluent.
8. Anaerobic digestion

	Conventional Rate	High Rate
Sludge retention time (days)	30- 60	10- 20
Solids loading (lb volatile solids/cu ft/day)	0.03-0.08	0.15-0.40

9. Vaccum filtration

	Filter Yield (lb/sq ft/hr)
Anaerobically digested	6-7
Primary	
Primary and trickling filter	5-6
Primary and activated sludge	4-5

10. Sludge drying beds

Application rate: 15 to 35 lb dry solids/sq ft/yr